



*the hometown of the 21st century*

# Town of Leesburg

Department of Public Works

MS4 Permit Requirements and Activities

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# Municipal Separate Storm Sewer System

- ▶ Municipal Separate Storm Sewer System (MS4)
  - ▶ **Municipal** system owned or operated by a public agency, such as a city, town, county, flood control district, state, or federal agency
  - ▶ **Separate** does not connect to the sanitary sewer system and does not lead to a wastewater treatment plant
  - ▶ **Storm Sewer System** a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains that move stormwater from one place to another

# What is the MS4 Permit

- ▶ Permit gives the town permission to discharge municipal stormwater runoff into local waterways
- ▶ The permit requires that the town follow guidance and complete specific activities to reduce potential pollutants from entering the town's storm water system and subsequently water ways such as Tuscarora Creek, Big Spring, Cattail Branch, Town Branch and Goose Creek
  - ▶ Storm water runoff refers to the excess water that flows into catch basins from rain or snow. Water flows into storm drain tunnels, underground storm drain systems and then into local water ways



# History Lesson

- ▶ The Clean Water Act (originally called the Federal Water Pollution Control Act) was first put into place in 1948.
- ▶ In 1972 it was revised and the NPDES - National Pollutant Discharge Elimination System was born. Under NPDES the permit program regulates point sources that discharge pollutants to water ways (e.g. sanitary systems, storm sewers, pipes, channel etc.)
- ▶ The Town of Leesburg participates under the Phase II permit program for smaller municipal systems. July 1, 2019 will be the start of our 16th year permit year.

# Governance and Enforcement

- ▶ Authorities involved with MS4
  - ▶ US Environmental Protection Agency (EPA)
  - ▶ Given federal authority through the Clean Water Act
- ▶ Compliance and enforcement authority
  - ▶ Virginia Department of Environmental Water Quality (DEQ)
  - ▶ Given statewide authority by EPA
- ▶ VA DEQ Issues Permits
  - ▶ Individual Permits
  - ▶ General Permits (5-year cycle) – Town of Leesburg

# MS4 Permit Program Purpose

- ▶ Protect water quality
- ▶ Reduce the discharge of pollutants to the “maximum extent practicable” (MEP);
- ▶ Satisfy the appropriate water quality requirements of the Clean Water Act



# Special Conditions

- ▶ While the primary focus of the MS4 permit is prevention, the permit contains special conditions that require the town to develop and implement “action plans” to address impaired waters. This specifically establishes the maximum amount of a pollutant that can enter a water body without violating water quality standards.
- ▶ Total Maximum Daily Load (TMDL) and Wasteload allocation (WLA)
  - ▶ Goal: reduction of nitrogen, phosphorus, suspended solids and sources of anthropogenic bacteria pollution
  - ▶ Chesapeake Bay TMDL Action Plan – Phosphorus reduction and Goose Creek Benthic TMDL action plan – Sediment reduction
- ▶ The town has two “impaired” streams
  - ▶ Tuscarora
  - ▶ Goose Creek

**an·thro·po·gen·ic**  
**/,anTHrəpō'jenik/**

***adjective***

**(chiefly of environmental pollution and pollutants)  
originating in human activity.**



# Minimum Control Measures

- ▶ MCMs specify the minimum activities we are expected to perform and document in our annual permit submission. All of these are geared towards reducing pollution. The tasks we track on an ongoing basis are all associated with one of these MCMs.
  - ▶ MCM #1: Public Education and Outreach on Stormwater Impacts
  - ▶ MCM #2: Public Involvement and Participation
  - ▶ MCM #3: Illicit Discharge Detection and Elimination
  - ▶ MCM #4: Construction Site Stormwater Runoff Control
  - ▶ MCM #5: Post-Construction Stormwater Management
  - ▶ MCM #6: Pollution Prevention and Good Housekeeping for Municipal Operations



# Stormwater Runoff

- ▶ Rain and snowmelt create stormwater runoff because not all stormwater “percolates” into the ground
- ▶ Stormwater runs over the ground and eventually enters waterbodies (i.e. streams, rivers, or lakes)

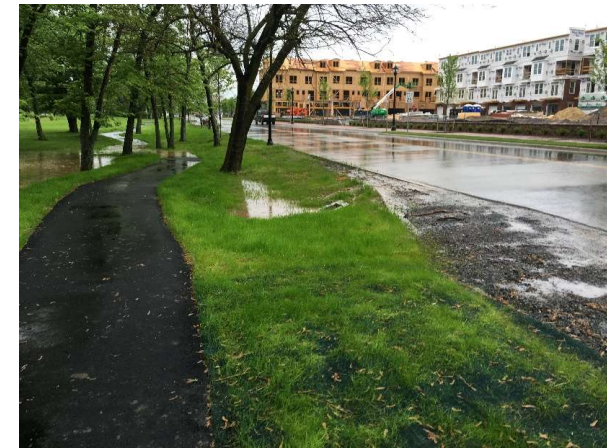
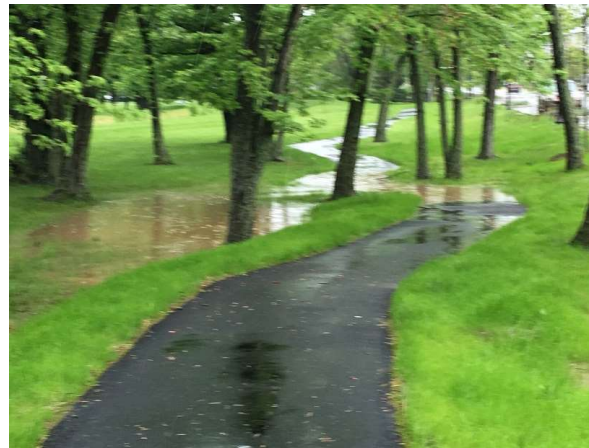
# Impervious Surfaces

- ▶ Impervious surfaces are man-made changes to the ground that make it “hard” and prevent rainwater from being absorbed into the ground. Examples include:
  - ▶ Roadways
  - ▶ Gravel or paved shoulders
  - ▶ Bike paths
  - ▶ Roof tops
  - ▶ Parking lots
  - ▶ Maintenance yards
  - ▶ Other compacted gravel and dirt area



# Stormwater Discharge

- ▶ When stormwater flows into a waterbody, it is called a stormwater discharge
- ▶ Stormwater discharges are either point source (from a channel, pipe, or ditch) or non-point source (where they spread out as they travel over the ground like trails, parking lot and roadway)



# Transport of Pollutants

- ▶ A pollutant is a material or chemical that affects water quality of a receiving waterbody
- ▶ Pollutants are transported during a storm event, and the pollutants are washed off with the stormwater
- ▶ Pollutants that are in the stormwater are then discharged into waterbodies (lake, river, stream, creek, etc. examples are Town branch, Big Spring, and Tuscarora Creek)



# Pollutants: Roadways and Parking Lots

- ▶ Vehicle Related
  - ▶ Antifreeze
  - ▶ Oil & grease
  - ▶ Heavy metals
- ▶ Roadway Operations and Construction
  - ▶ Road salt & deicing chemicals
  - ▶ Sand and “fines” from construction projects
  - ▶ Pesticides and fertilize
- ▶ Pollutants carried from nearby properties onto road or into ditch
  - ▶ Lawn Fertilizer
  - ▶ Pet Waste



# Pollution: Facilities and Commercial Areas

- ▶ Storage
- ▶ Stockpiles
- ▶ Road salt
- ▶ Oil, gasoline, asphalt
- ▶ Portable toilets
- ▶ Trash and debris
- ▶ VacHaul residuals
- ▶ Street sweepings
- ▶ Equipment oil and grease



# Pollution: Construction Sites

- ▶ Dirt (soil) erosion
- ▶ Fuel storage
- ▶ Machinery & equipment
- ▶ Metals
- ▶ Oil & grease
- ▶ Solvents
- ▶ Antifreeze
- ▶ Trash & other debris
- ▶ Portable toilets



# Pollution: Adjacent Properties

- ▶ Agricultural properties sediment, fertilizer and pesticides
- ▶ Commercial, industrial, and residential properties bacteria, sediment, nutrients, chemicals
- ▶ Wild animals -bacteria
- ▶ Livestock -sediment, bacteria & nutrients





# Related Infrastructure

- ▶ Stormwater Management Structures - Quantity (Ponds, Underground storage structures, storm pipes, inlets, culverts, Channels, Outfalls, )
- ▶ BMPs (Best Management Practices) - structural or engineered control devices and systems (e.g. retention ponds, Storm filters, Filterrras, Bioretention, Pavers pavement, Baysavers,) to treat polluted stormwater, as well as operational or procedural practices (e.g. minimizing use of chemical fertilizers and pesticides, prevent illicit discharges into the drains, inlets and streams).

# BMPs

- ▶ Permanent Structures
  - ▶ Stormwater basin or pond, stormceptors, baysavers, bioretention, pavers pavement Level spreaders, stormfilters, filteras
- ▶ Temporary Structures
  - ▶ Erosion control blanket
  - ▶ Silt fence
- ▶ Non-Structural
  - ▶ Maintenance practices
  - ▶ Prohibition of activities

# Temporary BMPs at South King Street



# Temporary BMPs at South King Street



# Examples of Permanent BMPs



# Permanent BMP: Construction of a Bioretention



# Stormfilters BMP Maintenance Activities



# Tuscarora High School

## Constructed Stormwater Facilities

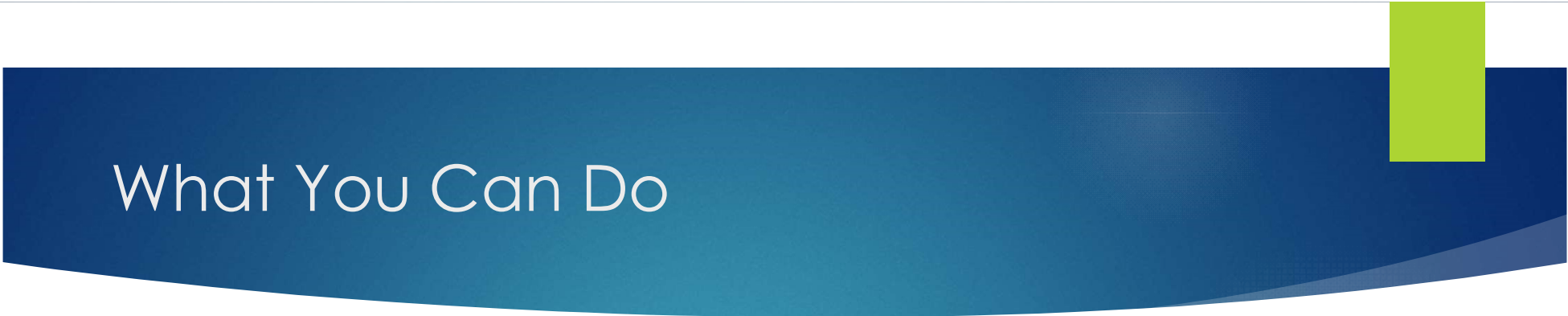
Quantity and Quality Control





# What the Town Does

- ▶ Develop programs and activities to comply with the 6 minimum control measures
- ▶ Build, inspect and maintain storm water system infrastructure
- ▶ Conduct public outreach to reduce pollutants from pet waste, illicit discharge and excess fertilizer
- ▶ Participate in public involvement program such as: Keep Leesburg Beautiful, Rain Barrel program, Paws program, storm drain marking to discourage people from dumping in the drains
- ▶ Respond to accidental spills from businesses such as gas, trash trucks and cooking oil
- ▶ Ensure use of appropriate construction site erosion control measures to prevent excess dirt and sediment from entering storm system during construction



# What You Can Do

- ▶ Pick up after your pets
- ▶ Reduce or eliminate use of excess lawn fertilizer
- ▶ Rake excess lawn waste (grass or leaves) and dispose of it in lawn bags
- ▶ Don't place pollutants in catch basins
- ▶ Get involve with the storm marking program
- ▶ Keep Leesburg Beautiful
- ▶ Rain Barrel program



# Acronyms

- ▶ BMP: Best Management Practices
- ▶ CWA: Clean Water Act NPDES
- ▶ MEP: Maximum Extent Practicable
- ▶ MCM: Minimum Control Measures BMP
- ▶ MS4: Municipal Separate Storm Sewer System
- ▶ NPDES: National Pollutant Discharge Elimination System
- ▶ TMDL: Total Maximum Daily Load
- ▶ WLA: Waste Load Allocation



Questions?